

Claims:

1. A braking system for a shaft mounted for rotation, the braking system comprising:

a brake disc coupled to the shaft for rotation therewith, the disc including a disc face having a plurality of disc plateaus positioned around the circumference of the disc, each disc plateau including a disc ramp extending between the disc face and a top surface of the disc plateau;

a brake plate mounted to be relatively stationary, the brake plate thereby rotating with respect to the brake disc, the brake plate including a plate face positioned substantially parallel and adjacent to the disc face and including a plurality of plate plateaus corresponding to the number of disc plateaus, each plate plateau including a plate ramp extending between the plate face and a top surface of the plate plateau, the plate ramps being angled relative to the plate face at approximately the same angle at which the disc ramps are angled relative to the disc face, the plate plateaus defining recesses between consecutive plate plateaus that are dimensioned to correspond to the disc plateaus such that the disc plateaus mate with the recesses; and

a spring biasing the disc face against the plate face.

2. The braking system of claim 1, wherein the disc ramp is angled approximately 10° relative to the disc face.

3. The braking system of claim 1, wherein the plurality of disc plateaus comprises three plateaus.

4. The braking system of claim 3, wherein the disc ramp is angled approximately 10° relative to the disc face.

5. The braking system of claim 4, wherein the plate ramp is angled approximately 10° relative to the plate face.

6. The braking system of claim 1, wherein the disc ramp is angled at an angle of between approximately 5° and 20°.

7. A braking system for braking a rotatable shaft, the system comprising:

a brake disc moveable between an engaged position and a retracted position, the disc including a disc face having a plurality of disc plateaus positioned around the circumference of the disc, each disc plateau including a disc ramp extending between the disc face and a top surface of the disc plateau, the disc ramps being angled at an angle of between approximately 5° and 20°;

a coil that is powered to create a magnetic field to move the brake disc between its engaged and retracted positions;

a brake plate mounted to the shaft for rotation relative to the brake disc, the brake plate including a plate face positioned substantially parallel and adjacent to the disc face and including a plurality of plate plateaus, each plate plateau including a plate ramp extending between the plate face and a top surface of the plate plateau, the plate ramps being angled at an angle of between approximately 5° and 20° relative to the plate face, the plate plateaus defining recesses between consecutive plate plateaus that are dimensioned to correspond to the disc plateaus such that the disc plateaus mate with the recesses; and

a spring biasing the disc face against the plate face.

8. The braking system of claim 7, wherein the number of plate plateaus is equal to the number of disc plateaus.

9. The braking system of claim 8, wherein the plate ramps are angled at the same angle as the disc ramps.

10. The braking system of claim 9, wherein there are three plate plateaus and three disc plateaus.

11. The braking system of claim 10, wherein the plate ramps and the disc ramps are angled at approximately 10°.

12. The braking system of claim 9, wherein there are three plate plateaus and three disc plateaus.

13. The braking system of claim 7, wherein there are three plate plateaus and three disc plateaus.

14. The braking system of claim 7, wherein the plate ramps and the disc ramps are angled at approximately 10°.

15. A method of braking a rotating shaft, the method comprising:

attaching the shaft to a brake disc, the brake disc having a disc face with shallow disc plateaus protruding from it; and

providing a brake plate with a plate face and a spring force to selectively engage the plate face of the brake plate with the disc face of the brake disc, the plate face having shallow plate plateaus protruding from it, the spring force being chosen to permit the disc plateaus to slide over the plate plateaus in a dynamic braking portion of the method and prevent sliding of the disc plateaus over the plate plateaus in a locking portion of the method.

16. The method of claim 15, wherein there are three disc plateaus and three plate plateaus.